

REMARKS/ARGUMENTS

After the foregoing Amendment, claims 1, 3, 8, 10, 15, 17 and 22-54 are pending in this application. Claims 2, 4-7, 9, 11-14, 16 and 18-21 have been canceled without prejudice or disclaimer. Claims 1, 3, 8, 10, 15 and 17 have been amended and new claims 22-54 have been added to more distinctly claim subject matter which the Applicants regard as the invention. The Applicants submit that no new matter has been added.

Claims 1, 8 and 15 stand rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 7,061,994 (Li et al., hereinafter referred to as Li). Claims 2, 9 and 16 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of U.S. Patent Application Publication No. 2005/0157813 (Cope et al., hereinafter referred to as Cope). Claims 3, 10 and 17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Li and Cope as applied to claims 2, 9 and 16, and further in view of U.S. Patent No. 3,950,750 (Churchill et al., hereinafter referred to as Churchill). Claims 4, 6, 11, 13, 18 and 20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of U.S. Patent No. 4,220,923 (Pelchat et al., hereinafter referred to as Pelchat). Claims 5, 7, 12, 14, 19 and 21 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Li and Pelchat as applied to claims 4, 9 and 16, and further in view of Churchill.

The present invention is an apparatus, (e.g., a digital baseband (DBB) receiver, a wireless transmit/receive unit (WTRU), an integrated circuit (IC)), for receiving and processing a wireless communication signal. The apparatus comprises:

(a) at least one demodulator which outputs analog real and imaginary signal components on real and imaginary signal paths, respectively, in response to receiving the communication signal;

(b) an analog to digital converter (ADC) coupled to the real and imaginary signal paths for receiving the analog real and imaginary signal components and outputting respective digital real and imaginary signal components; and

(c) a digital cross-talk compensation module in communication with the ADC, wherein the digital cross-talk compensation module receives the digital real and imaginary signal components, estimates the cross-talk interference caused by each of the signal components, and outputs digital real and imaginary cross-talk compensated signal components.

The Examiner is respectfully requested to refer to Figure 3. As now recited in amended independent claims 1, 8 and 15, the digital cross-talk compensation module comprises:

(i) a real signal path (185) for receiving the digital real signal component;

(ii) an imaginary signal path (190) for receiving the digital imaginary signal component;

(iii) a first delay unit (215A), coupled to the real signal path (185), for receiving the digital real signal component and outputting the digital real signal component after a first predetermined delay period (T) expires;

(iv) a first adder (220A), coupled to the real signal path (185) and the first delay unit (215A), for adding a negative value of the digital real signal component to the delayed digital real signal component (235A) output by the first delay unit (215A) to generate a first resulting signal (240A);

(v) a first multiplier (230A), coupled to the first adder (220A), for multiplying the first resulting signal (240A) with a first compensation signal (254) having a first predetermined value (K_1) to generate a second resulting signal (245A);

(vi) a second delay unit (210B), coupled to the imaginary signal path (190), for receiving the digital imaginary signal component and outputting the digital

imaginary signal component after a second predetermined delay period (T/2) expires; and

(vii) a second adder (225B), coupled to the second delay unit (210B) and the first multiplier (230A), for outputting the digital imaginary cross-talk compensated signal component (270).

The Applicants submit that the prior art of record fails to teach or suggest a digital cross-talk compensation module that includes a first delay unit (215A) coupled to a real signal path (185) and a second delay unit (210B) coupled to an imaginary signal path (190). Furthermore, the Applicants submit that the prior art of record fails to teach or suggest using the delayed digital real signal component (235A) output by the delay unit (215A) to generate a digital imaginary cross-talk compensated signal component (270).

Li discloses methods and apparatus for in-phase (I)/quadrature (Q) imbalance compensation. Pelchat discloses an adaptive interference reduction system for crosstalk cancellation. Figure 3 of Pelchat illustrates two delay units 110 and 112 connected in series, but fails to teach or suggest that the delay units 110 and 112 are respectively connected to real and imaginary signal paths. As illustrated by Figure 3 of Pelchat, the delay unit 112 receives its input from the delay unit 110. Thus, the delay units 110 and 112 are connected to the same signal path, (i.e., either a vertical signal path 10 or a horizontal signal path 12).

Claims 3, 10, 17 and 22-36 are dependent upon claims 1, 8 and 15, respectively, which the Applicants believe are allowable over the cited prior art of record for the same reasons provided above.

Based on the arguments presented above, the withdrawal of the rejections under 35 U.S.C. 102(e) and 35 U.S.C. 103(a) is respectfully requested.

The Applicants further submit that new claims 37-54 are also allowable over the cited prior art of record for the same reasons provided above.

Conclusion

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing amendment and remarks, Applicants respectfully submit that the present application, including claims 1, 3, 8, 10, 15, 17 and 22-54, is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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